Walker Art Center
Abstract
Project Title: Art on Call (AoC)

This Walker Art Center proposes to develop a new model for the museum audio guide, extending its application far beyond the capabilities of the current commercial products. Using an industry standard Interactive Voice Response (IVR) system, Walker resources (scripted audio segments and event information), and the museum visitor's own cell phone, Art on Call (AoC) will provide an alternative audio guide at a fraction of the ongoing costs associated with traditional programs.

The primary goals of the project are to:

- Develop a free universal onsite and offsite interactive audio information system that visitors can access using personal cell phones, equipment that they own, understand, and maintain. Offsite, the visitor can continue to access Walker resources through their cell phone or using traditional landline phones.

- Investigate the potential applications of advanced IVR capabilities within the museum environment, including date and time sensitive information, real-time integration of Web server-based information (audio files, text, etc.) via Text to Speech (TTS) translation, Voice Extended Markup (VXML), and Speech Recognition Software (SRS).

- Create an audio information resource that can inspire, entertain, and help Walker visitors gain a better understanding and appreciation of the museum's multidisciplinary programming. Visitors will be able to customize their experiences and access Walker resources according to their own interests and learning styles.

- Convert multi-use XML text information into an audio-based application.

- Evaluate the effectiveness of the project from the perspective of both information developer, provider (the museum), and end-user (museum visitor).

- Develop a scalable audio information system design that can be replicated in other museums or cultural centers as an alternative to or extension of traditional audio guides.

The anticipated result is that this project will significantly enhance the visitor experience by providing greater access to a wide range of information, from objects in the Walker's collection, to artists' interviews, to a daily schedule of the museum's activities. While museums' resources and collections may vary, the fundamental objective of AoC—to create an audio information resource that can inspire, educate, and assist museum visitors—can be replicated by using the model we propose to develop.

Walker Art Center
Art on Call (AoC): Project Narrative

1. National Impact

Just as artistic practice has changed in light of blurring disciplines and the advent of interactive technologies, models and practices of learning and teaching have changed as well. The concept that learning is a complex activity that takes place in a variety of interrelated personal, socio-cultural, and physical contexts is dramatically shifting the ways in which museums shape visitors' experiences. In May 2005, the Walker will open an expanded facility designed to be a model 21st century art center with audience engagement and experiential learning at its core. Visitors to the new Walker Art Center will encounter an energized social space or "Town Square," consisting of a series of spaces for learning that will be threaded along the circulation route of the entire complex. The expanded facility also will double the gallery space for the permanent collection; add a technologically sophisticated performing arts studio for music, dance, and theater; and upgrade the existing auditorium for film/video presentations. Over the last five years, the Walker has experimented with programs and installations that invite and encourage new forms of audience participation while considering different modes of learning. Our expansion now offers a singular opportunity to build on this work to create innovative interpretive strategies that provide broader and deeper access to the institution's multidisciplinary collections and programming.

Currently, audio guides are one of the most common ways of providing interpretation about a museum's special exhibitions and permanent collection. Nearly everyone who has visited a museum or cultural center has some experience with an audio guide. According to Antenna Audio, one of the largest providers of audio guide equipment and interpretation in the cultural arena, more than 50,000 people use Antenna audio guides each day in hundreds of museums, archaeological sites, and visitor destinations.[1] Usually, the visitor rents the audio guide at a distribution desk within the museum and uses it to access content in the form of commentary and sometimes music that is stored on the player itself. Tours, even random access ones, have traditionally been primarily linear in format, moving museum visitors through spaces in a pre-determined sequence. Player sizes vary but they are usually attached to a strap that the visitor carries over his or her neck, shoulder, or wrist. The visitor activates the program using a keypad and buttons and normally listens to audio messages through headphones.

Despite their popularity, audio guides can be problematic for both museums and their audiences. For small to medium size museums in particular, the challenges associated with providing an audio guide include the expense of producing a single-purpose program that is often captured in a proprietary format controlled by the company producing the tour; the inability to easily and instantaneously update information on an as-needed basis (i.e., by the hour, day, etc.) from a remote central source; and the need for distribution areas and trained staffing within the museum. Maintaining the equipment involves recharging the players and upgrading the technology according to an ever-evolving marketplace and the changing expectations of museum visitors. In outdoor venues, such as sculpture gardens or parks, securing the equipment and making sure it

gets returned are additional issues. For the museum visitor, barriers to using audio guides include cost, with fees generally ranging from $4 to $6 per player; single or limited distribution areas within the museum that prohibit spontaneity (i.e., making the decision to use a guide after entering the galleries); unfamiliarity with how to use the technology and interfaces; static, unchanging information that is unattractive to repeat visitors; and the inability to interact socially with friends as a result of following linear, or pre-planned tours,[2] and wearing headphones.

This project proposes a new model for the museum audio guide, extending its application far beyond the capabilities of the current commercial products. Using an industry standard Interactive Voice Response (IVR) system, Walker resources (scripted audio segments and event information), and the museum visitor's own cell phone, Art on Call (AoC) will provide an alternative audio guide at a fraction of the ongoing costs associated with traditional programs. This project will significantly enhance the visitor experience by providing greater access to a wide range of information, from objects in the Walker's collection, to artists' interviews, to a daily schedule of the museum's activities. The flexibility of the system also will allow visitors to personalize their visit, providing more spontaneity, opportunities for social interaction, and two-way communication with the museum.

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2. Adaptability

AoC will provide a model for developing a museum audio information guide using an IVR system and cell phones. As part of this project, the Walker will develop guidelines for building an audio information application that is independent of any particular telephone system and that is scalable according to the size and needs of various museums. The AoC evaluation will provide data about what information resources are most used; the percentage of museum visitors who carry cell phones; their willingness to use cell phones to access museum information; and their responses to the application. While museums' resources and collections may vary, the fundamental objective of AoC—to create an audio information resource that can inspire, educate, and assist museum visitors—can be replicated by using the tools that we outline below.

3. Design

Audience

AoC will take place over a 21 month-period and become available to the public in May 2005, when the Walker's new facility opens. Following recommendations in a 2003 audience development plan by the consulting firm Blakeley & Company, LLC, AoC is being developed to further the Walker's key strategies for attracting new audiences and encouraging repeat visitation. Through AoC, the Walker will be able to leverage its significant information resources to enhance learning, increase the visibility of its programs (over 500 events are programmed annually), and convey the multidisciplinary nature of the institution. We believe that AoC can address two particular challenges that Walker audiences face–"I don't get it" (i.e., I don't understand the art I am seeing) and "I didn't know about that" (i.e., I didn't realize the Walker offers so many activities to choose from).

Through AoC, we will strive to:

- Inspire visitors to visit often and do more.
- Broaden the visitor experience (try more of the same, try new things in same program area, try new programs).
- Deepen the engagement and enhance the visitor experience through learning about art.

The Walker's attendance for its most recently completed fiscal year, which ended on June 30, 2003, was 767,023 visitors. This places the Walker among the ten-most visited art museums in the nation. According to a survey conducted in 2000, the Walker's audience is well-educated, loyal, and quick to embrace new technologies and opportunities. 90% of Walker members and 71% of visitors are college graduates; 69% of visitors and 63% of members are between 20 and 49 years of age; and 90% of members attend museum events five times during the year. The survey also revealed that members want Walker visits to be inspiring as well as challenging, enjoyable, and a learning experience. When asked to rate the importance of their experience, 47% of respondents ranked being inspired by great art as most important; 41% said learning something new; 39% said having an enjoyable time; and 37% rated feeling intellectually challenged as most important.

Cell phones are one of the most standardized pieces of two-way information technology owned and used by the U.S. population. Currently over 50% of the total U.S. population (including children and elderly) have cell phones.[3] Walker visitors fit the demographic of people who own cell phones and who would embrace AoC.

Project Overview

Walker visitors will be able to access AoC through their cell phones. Anytime a visitor wants to get information, they can call the Walker through one easy-to-remember phone number. A simple voice menu will prompt the caller with a short list of top-level menu items, including general information (hours and directions), today's events, upcoming events, exhibitions, live tours, and audio tours. The visitor can either verbally state their selection or access their choice through the phone's keypad. We also will explore the development of advanced features that could allow users to verbally sign up for mailing lists, etc.

With AoC, visitors can choose their own path through the Walker and call up information as needed or desired. A wallet size AoC "calling card" and museum signage will prompt visitors as to what kinds of information are available. Based on what we have learned from research conducted by The Minneapolis Institute of Arts,[4] audio segments or "stops" will be designed to be short—the average clip length is less than two minutes—and may be combined with additional stops for a more in-depth investigation of a particular work or program.

The following are a few examples of the kind of interactions an AoC user might experience.

1) While viewing Charles Ray's Unpainted Sculpture in one of the permanent collection galleries, Jessica calls a number that she sees on the label in order to listen to an excerpt from a 1999 gallery talk with the artist. At the end of the segment, she is asked, "Are you interested in the curator's interpretation of the work?" A "yes" response plays the curator's remarks about how the artist selected his subject, a crashed car. If she says "no," the program asks Jessica if she is interested in other works on view, and if not, instructs her to say "goodbye" to end the call.

2) Sam is sitting in the Hennepin Avenue Lounge when he calls and asks for Today's Events. After being informed that a concert by jazz musician Bill Frisell will take place at 8:00 pm in the performing arts studio, he is given the opportunity to listen to a sample of the artist's work and if he likes it, to buy tickets to the concert. Assuming from his selection that Sam is interested in music, the program asks him if he would be interested in hearing about other upcoming Walker concerts.

3) Kris is interested in taking an architectural tour of the Walker and learning more about the decisions that informed the design of the new facility. She listens to a selection from an interview with architect Jacques Herzog, after which she is given the option to follow a series of audio stops that guide her through spaces inside and outside the building.

4) Tom is visiting the Minneapolis Sculpture Garden with his 10-year old daughter, Chloe. He dials into AoC, selects a Kid's Call, and hands his daughter the phone. The narrator greets Chloe and tells her that they are going to play a look-and-find game with Frank Gehry's Standing Glass Fish sculpture. The narrator asks Chloe to look at the sculpture and count how many pieces of glass make up the fish's fins and enter her answer using the phone's keypad. After she answers, the narrator guides her through counting the fins and then asks her another question.

Content

AoC will take advantage of the Walker's extensive archives and databases that have been created to manage event and collection information now available on the Walker's Web site (collections.walkerart.org and calendar.walkerart.org). In addition, the rich media (sound and moving image) that is being curated for the learning spaces in the new building and the Internet-based Walker Channel (see the Walker's webcasting archives at channel.walkerart.org) represent a treasure-trove of digitized material from which we can make audio selections for the AoC project.

The interpretative section of the project will have a maximum of 100 stops. We estimate the content will consist of 75% edited archives and 25% new narration of scripted material. In the Minneapolis Sculpture Garden and selected Walker galleries, 75% of the work on view will be represented, and 10% of that will be accompanied by "super stops" (tiered information with one or two additional audio segments). While final selections will be made during the early stages of the project, the audio tour will include an exhibition entitled Mythologies that is built around the idea of historical or contemporary mythologies found in the work of artists such as Joseph Beuys, Sigmar Polke, and Anselm Kiefer. We also will implement AoC in a gallery devoted to four artists with whom the Walker has developed long-term relationships: Robert Gober, Sherrie Levine, Matthew Barney, and Kara Walker. The depth of material we have collected on these artists will provide especially rich context for their work.

A critical component of AoC is the access it will provide to information about the Walker's daily programs and upcoming events. The Walker maintains an extensive database with detailed information and rich descriptions about films, performing arts events, educational programs, artist residency-related activities, and exhibitions. AoC will tap into these resources and make them available as audio versions of the text now available on the Walker Web site.

Technology

For the past year, the Walker has been redesigning its Web site and implementing a technical infrastructure that changes the way we work and think about our data and its output. The new site is database driven and generated using an Extensible Markup Language (XML) application server and World Wide Web Consortium (W3C) standards. This open standards-based approach provides the benefit of separating the storage, processing, and presentation of museum-related data, and the ability to use the data for multiple applications beyond the Walker's Web site. For example, the Walker's online calendar includes a Really Simple Syndication (RSS) feed for news aggregators, which

is a translation of the XML used to produce the calendar. The proposed IVR project will take full advantage of this standards-based architecture, allowing the Walker to reuse this content to drive a VXML interactive audio-based telephony application. Historically, standard Voicemail and IVR systems have been very proprietary and therefore unsuitable for allowing access to Web-based content. With the newly developed VXML standard, it is now possible to create interactive telephony applications that seamlessly integrate with standards-based Web and/or database applications. Current IVR systems are capable of taking caller input in the form of numeric keypad entry or voice commands (using automatic speech recognition) and retrieving data based on the user's request, similar to clicking a link on a Web site. IVR systems are capable of responding to callers with a variety of media, including pre-produced multi-use audio segments (MP3s, Real Media, etc.) as in the earlier examples from the Walker's archives, as well as synthetic audio segments that are dynamically generated from XML text converted to speech by a Text-to-Speech (TTS) engine. Current TTS engines are capable of producing a range of voices including foreign languages. For a simple demonstration of IVR technology, please call (866) 442-2054 and enter the pin number 1234. For a diagram of the technology, see attachments.

Opportunities for Experimentation

In addition to the activities described above, we would like to leave open the possibility for experimentation in developing other areas of IVR capabilities. Examples include providing content in a language other than English, using computer-based translation services; potential applications for the sight-impaired, thereby opening the experience for people with different abilities; text messaging integration; delivering a personalized experience using Caller ID, e.g., you accessed this (saw this), so here are other programs that relate to your interests; and a Global Positioning System integration to create tours based on an awareness of the visitor's location. Small demonstration projects will be evaluated and conducted for each of these extended IVR applications. Experimental applications that are deemed feasible and cost-effective may be implemented during the proposed grant period or in the future. Findings from all experimental applications will be incorporated into the overall project evaluation.

4. Management Plan

Because the public launch of AoC is scheduled to coincide with the opening of the new Walker Art Center in May 2005, the system must be developed, installed, and tested by April 2005. After the project's launch, Walker staff and contractors will focus on marketing, enhancing, and evaluating AoC. Because this project builds on and supports audience development and educational initiatives designed for the new building, responsibilities for its ongoing support fit within existing staff responsibilities.

In determining the feasibility and scope of this project, Walker staff worked with Scott Sayre, an external technology consultant with extensive experience in telecommunications and new media applications, and a number of leading IVR companies, including BeVocal, Envox, Vocomo, Plum, and Angel systems. Together, Sayre and the IVR companies defined and scaled the IVR system requirements and budget based on available Walker resources, applications, and anticipated usage.

Industry standards for estimating IVR system capacity, called Erlang calculations (www.erlang.com), were used to scale the system to meet the anticipated hourly visitor usage based on previous trends in Walker attendance.

To further develop this project, the Walker will contract Sayre as an external Project Manager. Sayre will work under the direction of Robin Dowden, Walker Art Center's Director of New Media Initiatives. Dowden and Sayre will contract with one of the IVR companies listed above to build the IVR system, and they will work with the IVR vendor and staff from the Walker's Education, New Media, Design, Marketing, and Information Technology (IT) Departments to develop a detailed program design that supports institutional objectives and serves the needs of the Walker's audience. Contracted evaluators who will assess the outcome of the project will be briefed on AoC's design and will work with Walker staff on defining data collection requirements.

After a final program design is approved, Walker's Interpretive Materials Workgroup will develop the final checklist of artworks to be included in AoC. Related audio, video, and text archives will then be selected and in some cases supporting scripts will be written by an external scriptwriter under the direction of Walker Curators from all disciplines and Education staff. Walker Visitor Services staff will develop required scripts for menu prompts and general museum information. The Project Manager will then oversee the remaining recording, music composition, and editing of this material by external contractors experienced in the production of museum quality media.

The Walker's Webmaster and Systems Administrator will work with the contracted IVR vendor to develop the linkages between the Center's XML-based calendar and collection information with the IVR program. He also will develop linkages to the new and existing prerecorded audio segments so they are available both to the IVR system and to the Walker Web site. The Walker's IT Director and the Project Manager will work with the IVR vendor and the local phone company, Qwest, to add additional phone lines and configure the existing phone system for the addition of the IVR system.

When the IVR and internal programming has been completed and alpha tested, the IVR vendor will physically install the system on site with the assistance of Walker IT and New Media staff. The IVR vendor will review all of the programming with Walker staff and train the staff on how to modify the program and maintain the system. Walker staff will then begin beta testing the program and determine if there are any programming or coverage problems. The Walker's Marketing and Design staff will create a marketing campaign for AoC, indoor and outdoor signage and labels, and a plastic "calling card" that will be distributed to visitors to assist them in using the system.

Once the new building is open and AoC is publicly launched, professional contracted evaluators will work with Walker staff to develop and conduct a month-long phone-based user survey. The results of this survey, along with the results of 12 months of data collection, will be used by the evaluators to assess the users' experience and write the final report. The Project Manager will write a short technical paper summarizing the technical costs and feasibility of IVR application in museum environments.

5. Budget

The total cost of the 21-month project is $246,150. The non-federal cost share is $86,150. The Walker is requesting $160,000 from IMLS, which will be used to support equipment and software purchases, contracted project staff, evaluation and marketing costs, dissemination, and travel. The IVR system budget is based on actual bids from vendors in response to a Museum IVR Project Requirements document distributed in February 2004 (requirements document and sample bids are included in the attachments). This project is particularly cost-effective as it builds on an XML-based infrastructure developed for the Walker's Web site.

6. Contributions

The Walker seeks funding for New Media and Education programs from a variety of sources. Major grants from the State of Minnesota's Department of Children, Families & Learning provided the foundation for our Web-based resources. A recently awarded grant from The Bush Foundation to support the development and evaluation of programming in the new facility will provide a portion of the match, and other public and private sources will be approached for project funding. All Walker staff salaries are included in the Walker's portion of the match.

7. Personnel

AoC will bring together staff from all of the Walker's curatorial and programming departments. Scott Sayre of Sandbox Studios and former Director of The Minneapolis Institute of Arts' Interactive Media Group will be the principal contractor responsible for project management. The Institute for Learning Innovation and private contractor Mary Ellen Murphy will lead AoC's evaluation. The following are brief descriptions of the key project personnel; resumes are included in the attachments.

Robin Dowden is the Walker's Director of New Media Initiatives. She will oversee content development, coordination of internal staff, and the dissemination of project findings and reports. At the Walker, Dowden has helped build an infrastructure for the effective use of digital technologies to support museum programming that is recognized as a national model. In addition to directing the development of the Walker's Web site, she has lead responsibility for implementing information systems for public access of Walker resources. She also directs Internet-based special projects including ArtsConnectEd, a joint initiative of the Walker and The Minneapolis Institute of Arts that is recognized as an international model for Internet gateways to educational resources, and mnartists.org, an online resource for Minnesota artists developed by the Walker and The McKnight Foundation. Prior to joining the Walker, Dowden was the Collections Systems and Web Site Manager at the National Gallery of Art, Washington, D.C.

Scott Sayre is an independent museum technology consultant with over 18 years of experience integrating technology in informal learning environments. He served as the Director of Media and Technology at The Minneapolis Institute of Arts from 1991-2002, overseeing interactive media, IT, telecommunications, and publications. Prior to his museum work, Sayre held the position of Media Applications Specialist at the University of Minnesota's Telecommunications Development Center. He has a Doctorate in

Education from the University of Minnesota and a M.Ed. and B.A. in Visual Communication Technology.

Nathan Schroeder is the Walker's Webmaster and Systems Administrator. He will be the technical coordinator on the Walker team and will be responsible for database integration and IVR application maintenance. Schroeder developed the Walker's online calendar (calendar.walkerart.org), including the administrative component that allows Walker staff to manage its content.

The production of AoC's interpretative content will be directed by the Walker's Interpretative Materials Workgroup. This cross-departmental group is led by Sarah Schultz, Director of Education and Community Programs, and is comprised of staff from the Visual Arts, New Media, Design, Marketing, and Education and Community Programs Departments. The group meets monthly to develop innovative interpretive strategies for exhibitions and other Walker programs, including the Web site. This group also is working on ways to use new technologies in the Walker's expanded facility to facilitate learning, dialogue, and social interaction.

8. Project Evaluation

To evaluate and report on AoC's success achieving its goals, the Walker will contract the Institute for Learning Innovation (ILI) and Mary Ellen Murphy, an outcome-based evaluation specialist with previous experience evaluating museum media and reporting on IMLS grant funded projects. Data for evaluating the project will be collected in three ways: 1) through statistics on usage generated by the IVR program; 2) through an IVR-based user survey; and 3) a survey of Walker staff. At the project's onset, ILI and Mary Ellen Murphy will work with Walker staff to define a set of measurable outcomes to assess the use and effectiveness of the system from both visitor and staff perspectives.

After the outcomes have been defined, Walker staff and the Project Manager will work with the IVR vendor to define statistical variables that can be collected while AoC is in use. The system will use Caller ID information to track an individual's use of various aspects of the IVR program. Variables such as time of day (museum open or closed), duration of call, location (based on object information accessed), and call transfers (from the IVR to the ticket office) will be used to track usage trends of both individuals and groups. This data can then be correlated with the daily statistics on Walker visitors that are collected by Visitor Services staff at the Walker's entrance.

Six months after the launch of the program, the evaluators, Project Manager, and Walker staff will develop a phone-based survey to be added to the IVR program to collect user reactions to the system. The survey instrument will have the ability to collect multiple choice and numeric rating/ranking responses as well as to record free form spoken comments. The phone survey itself will serve as an IVR application that will be assessed as a part of the overall evaluation. The development of an additional paper-based version of the survey also will be considered as an option for visitors who are frustrated by the system or did not to use it at all. The visitor survey will be conducted for one month.

At the end of the visitor phone-survey, the evaluators will analyze the results and produce a small interim report that could be used to make informed improvements to the system. After twelve months, the evaluators will summarize the data collected from the phone survey and the statistics generated by the IVR system. Walker Marketing, Education, and New Media staff will be surveyed as to the efficiency of the system integration and the costs and benefits associated with its implementation, availability, and ongoing support. This survey data will be summarized and integrated with the user findings and then will be assessed against the desired outcomes. A public report will be generated to distribute these findings.

9. Dissemination

Results from this project will be broadly disseminated. The report on IVR technology is scheduled to be completed in February 2006. AoC's outcome-based evaluation report will be prepared following a mid-year visitor survey (September 2005) and a full year of data collection (June 2006). These reports will be distributed on the Walker's Web site and in printed form. In addition, project participants will give presentations at conferences serving the museum community, including Webwise, Museums and the Web, and the annual conference of the American Association of Museums (AAM). After the grant period, the technology will be presented at the fall 2006 meeting of the Museum Computer Network (MCN).

10. Sustainability

The Walker's New Media Initiatives Department will assume responsibility for ongoing maintenance of AoC's IVR application. As noted on page 6, IVR opens up a host of opportunities for experimentation in areas ranging from accessibility to personalization. AoC will continue to be refined and enhanced based on the results of the evaluation and users' responses.

The Walker believes this project will be very appealing to wireless service providers. Should the demand for AoC by visitors that do not have cell phones or a need for minutes outside our visitors' calling plans arise, the Walker will seek donations from wireless service providers for minutes and/or devices that could be borrowed. These same companies will be approached to fund feature enhancements, new equipment purchases, and maintenance as needed.

The development of AoC will produce a scalable model, research, and the tools (information) necessary to make it possible for other museums to adopt this emerging technology.

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[1] http://www.antenna-audio.com/

[2] Aoki, P.M., A. Hurst, M.H. Szymanski, and A. Woodruff, "Electronic Guidebooks and Visitor Attention," *Proc. 6th ICHIM*, Milan, Italy, 2001.

[3] http://news.com.com/2100-1040_3-200336.html

[4] Sayre, S, "The evolution of interactive interpretive media: A Report on discovery and progress at the Minneapolis Institute of Arts," *Proc. 2nd ICHIM*, Cambridge, England, 1993.